

*SOCIAL INTERACTION SKILLS FOR CHILDREN
WITH AUTISM: A SCRIPT-FADING PROCEDURE FOR
BEGINNING READERS*

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Engaging in spontaneous social exchanges is a central skill deficit of children with autism, and one that is often difficult to remediate. The 3 boys (ages 4, 4, and 5 years) who participated in this study had acquired small verbal repertoires, but typically spoke only when answering questions or requesting preferred edible items or toys, and did not converse with a familiar teacher during baseline. During teaching, textual cues (“Look” and “Watch me”) were embedded in the youngsters’ photographic activity schedules; after learning to use the scripts, the children’s verbal elaborations and unscripted interactions increased and were maintained when a new recipient of interaction was introduced. After scripts were faded, unscripted interactions not only continued but also generalized to different activities that had not been the topic of teaching. The script-fading procedure enabled children with autism to converse with adults, to benefit from adults’ language models, and to engage in language practice that contributes to fluency.

DESCRIPTORS: autistic children, antecedent control, pictorial cues, social interaction, script fading

Research clearly demonstrates that many children with autism who receive science-based intervention learn to talk. However, many youngsters who have acquired complex verbal repertoires nevertheless fail to engage in language that is not evoked by verbal cues (Charlop, Schreibman, & Thibodeau, 1985). Although they dependably respond to adults’ questions or prompts, they do not spontaneously initiate or continue interactions that do not produce preferred items or activities.

Charlop and Trasowech (1991) successfully taught parents to use delayed prompts to increase their children’s spontaneous speech in several different settings; for example, the mother’s presence in the child’s bedroom at bedtime evoked the response, “Good night.” The children quickly ac-

quired the target responses, which were maintained for as long as 30 months and generalized across persons and locations, but there were only small increases in response variation (utterances that differed from previous utterances by one or more words).

In response to this dilemma, we previously examined the effects of a script-fading procedure on the conversational initiations and responses of 4 youths (9 to 12 years old) with autism (Krantz & McClannahan, 1993). In that investigation, 10 scripted statements and questions were faded to minimal prompts (single quotation marks), and the youngsters continued to engage in contextual peer interaction that generalized to a different setting, time, and activity, and was maintained over a 2-month period. But most important, as the scripts were faded, unscripted interaction increased; the participants recombined elements of scripts and portions of their existing verbal repertoires and exhibited spontaneous, generative language.

Subsequent to that research, we used script-fading procedures in the Institute’s ed-

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ucation program, to the advantage of other children who displayed similar reading skills, but it was not evident how to apply this technology to beginning readers (those who had reading repertoires of only a few words). Young children were of special interest; although they typically had minimal or no reading skills, data on the relationship between age at intervention and treatment outcome (Simeonsson, Olley, & Rosenthal, 1987) suggested the urgency of developing early spontaneous language.

The present study sought to extend script-fading procedures to children with minimal reading skills. It was based on the premise that if young children with autism learned to participate in social exchanges, they might, like typical children, benefit from more frequent experience with adults' language models (Hart & Risley, 1995).

METHOD

Participants and Setting

David, Jeremiah, and Ben, ages 5, 4, and 4 years, respectively, participated in the study. Before their enrollment in the Princeton Child Development Institute's preschool, all had received diagnoses of autism, and they met the criteria of the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., rev.; American Psychiatric Association, 1987) for autism. Their IQ scores on the Stanford-Binet Intelligence Scale (4th ed.) were 62, 42, and 36, respectively. They had attended the preschool for 0.4 to 2.4 years and had acquired small expressive language repertoires, but their spontaneous initiations were confined to requests for preferred foods or toys and were typically limited to single words (e.g., "candy" or "truck"). They had never been observed to initiate by showing an object to an adult and saying, "Look" or "See?" nor did they attempt to gain adult attention with verbal productions such as "Watch me." The boys'

parents gave informed consent for their participation in the study.

The research was conducted in a small classroom furnished with a desk, chairs, and bookcases on which toys and preacademic materials were displayed. A recipient of interaction (a familiar teacher) sat in one corner of the room, facing the child. A photographic activity schedule, in a notebook (13 cm by 18 cm), was placed on the desk top. The notebook contained 16 35-mm photographs of 11 different activities; because of the boys' limited repertoires, five photographs appeared twice. Photographs were displayed, one picture to a page, on a plain background. They depicted materials and activities that were available in the classroom (Lego® blocks, basketball and hoop, frame-tray number puzzle, tambourine, crayons and pictures to color, fireman's hat, chalk and small chalkboard, toy piano, a gymnastics tuck, a doll, and a picture-matching task). Legos®, basketball, number puzzle, coloring, and tambourine appeared twice. Four different sequences of photographs were systematically rotated across sessions. Sessions were conducted once or twice daily at 9:00 a.m. and 1:00 p.m.

Preinvestigation Instruction and Assessment

Prior to this research, all 3 children had learned to follow photographic activity schedules (cf. Krantz, MacDuff, & McClannahan, 1993; MacDuff, Krantz, & McClannahan, 1993; McClannahan & Krantz, 1997). That is, they had learned to point to a photograph depicting an activity, obtain the corresponding materials, complete the activity, and return the materials to their original location. When assessed before the study began, the boys achieved 80% to 100% accuracy in completing the components of a five-activity schedule that had recently been taught in their classroom.

In preparation for the study, the children

were taught to read the words "Look" and "Watch me." These words were presented on flash cards in random order, the child was instructed "Read," and the teacher provided verbal models, which were gradually delayed. Prompted responses were followed by praise, and unprompted correct responses were followed by praise and tokens that were later exchanged for preferred activities. Each boy achieved 100% accuracy on 10 mixed trials of the target words before baseline began.

Dependent Variables

Interaction was defined as one or more understandable words that were said while a child was within 1 m of the adult recipient with his body oriented toward her; the words were also separated from the child's previous verbalizations by a change in scheduled activity or by a verbal response made by the recipient. Verbal behavior that was verbally, gesturally, or manually prompted by the teacher was not scored as interaction. If the adult recipient of interaction asked a question or gave an instruction to which the child responded, his response was not scored as interaction. If a boy interacted and then repeated the same word or phrase, the repetition was not counted as interaction, even if the two verbal productions were separated by a comment from the recipient.

Scripted interaction was defined as saying the words "Look" or "Watch me" when the activity schedule was open to a page that displayed those words or portions of those words. If a boy said "Look" when his activity schedule displayed the words "Watch me," this interaction was not scored as scripted but was scored as unscripted.

Elaborations were verbal productions that differed from a script and that occurred after the child said "Look" or "Watch me." If the adult made another statement and the child responded again, another elaboration occurred. Elaborations were scored only when

the photographic activity schedule was open to a page that contained a script or a portion of a script. Even if the script was "Look" and a boy said "Watch me," his subsequent verbal behavior that followed a comment by the recipient was scored as an elaboration.

Unscripted interaction was scored when a youngster said one or more understandable words in the absence of a script or portion of a script. Unscripted interaction also included the words "Look" and "Watch me," if these were said when the page to which the activity schedule was open did not display any textual cues, or if the participant said "Look" when the script said "Watch me" or said "Watch me" when the script said "Look." Each successive verbal response that followed a statement by the recipient was scored as another unscripted interaction if no script or portion of a script was present on the page to which the activity schedule was open.

Experimental Design and Measurement

A multiple baseline design across children was used to assess the effects of scripts and script-fading procedures on the boys' frequency of interaction. Data sheets were divided into sections, one section for each of the 16 activities in the photographic activity schedule. Data sheets also indicated whether each page of the schedule contained a script, and if so, which script was displayed. A continuous event-recording system was used within each section of the data sheet; observers moved to the next section of the data sheet when a participant turned a page of his activity schedule. Scripted interactions, elaborations, and unscripted interactions were recorded word by word. Agreements were scored only if both observers recorded the same words, in the same sequence, and in the same section of the data sheet. Observers also noted whether the child engaged in the activity depicted in his photographic activity schedule.

Experimental Conditions

Prior to each session, a boy selected a preferred toy or activity that he received following the session; no rewards were delivered during sessions. Sessions began immediately after the teacher, standing behind the child, manually guided him to stand in front of the desk where the photographic activity schedule was displayed and gave the instructions, "Have fun. Play with your toys. Do your schedule." Sessions ended after a child completed his activity schedule.

Throughout all conditions, the recipient of interaction sat facing the participant. She was instructed not to ask questions or give directions, but only to respond to the child's interaction with phrases or short sentences relevant to his most recent activity or to the materials he was using, displaying, or talking about. For example, if a child showed the recipient a recently colored picture of Big Bird and said, "Look," the recipient might respond, "It's Big Bird."

Baseline. Standing behind the child, the teacher used graduated guidance to prompt him to point to a photograph in the schedule, obtain the depicted materials, complete the activity, return materials to their original location, return to the schedule, turn a page, and repeat this sequence. As soon as possible, manual guidance was reduced from full hand-over-hand prompts to light touches of the child's hands. Graduated guidance was then replaced by spatial fading (Cooper, 1987); that is, the teacher faded prompts from the student's hands to his wrist, arm, elbow, and shoulder. Spatial fading was followed by shadowing (the teacher followed closely behind the student but did not touch him), and then teacher proximity was faded. Ultimately, the teacher stood on the opposite side of the room from the participant.

These prompting tactics were used to achieve an almost errorless teaching procedure. Errors were prevented when possible;

if an error occurred (e.g., a student turned two pages of his schedule instead of one or selected the wrong materials), the teacher manually guided the correct response and then returned to the previous level of prompting (e.g., if she had been shadowing the student, she returned to spatial fading) for the remainder of that activity and then again faded prompts. In addition, prompts were always delivered from behind the student, and the teacher was instructed not to put her hands or any other part of her body between the student and his materials or activities. Baseline ended after three consecutive sessions in which no prompts were delivered.

Teaching. The same 16 activities continued to be depicted in the photographic activity schedule, but the scripts "Look" and "Watch me" were displayed (in 72-point, bold upper and lower case letters) on white note cards that were attached to the plain background pages, either above or beneath target photographs (e.g., "Watch me" sometimes appeared above a picture of a fireman's hat that the child could wear, and "Look" was sometimes displayed below a picture of a Lego® construction). During teaching, new recipient, and script fading conditions, scripts were systematically rotated across 10 of the 16 depicted activities; six photographs and associated activities were never paired with the scripts.

The teacher, standing behind the boy, manually guided him to point to a script. If the youngster did not say the script, the teacher, remaining behind the child, provided a verbal model (e.g., "Look"), initially spoken at conversational volume, but later uttered *sotto voce* near his ear. If the participant did not then approach the recipient of interaction, the teacher manually guided him to approach within 1 m (delineated by a 4.5-cm taped line on the floor). If the boy did not say the script to the recipient, the teacher guided him to return to the schedule

and point to the textual cue; then she once again provided a verbal model and quickly guided him to approach the recipient. Verbal models were provided only when the boy was pointing to a textual cue; the teacher did not provide verbal models when the boy was standing in front of the recipient of interaction.

The textual cue "Watch me" was always displayed above photographs of activities, and the child was manually guided to obtain the relevant materials (e.g., a hat or basketball), approach the recipient and say the script, and then perform the target task (e.g., wearing the hat or throwing the ball). The cue "Look" was displayed below the pictures in the schedule; children were prompted to complete a depicted activity and take a completed product (e.g., a Lego® construction or frame-tray puzzle) with them when they approached the recipient and said "Look." Prompts for pointing to and saying the scripts and approaching the familiar adult were faded as quickly as the boy's performance permitted, and manual guidance was replaced by spatial fading, shadowing, and decreases in teacher proximity.

Although Ben reliably said the scripts when pointing to the textual cues in his schedule book, he often failed to say them after approaching the recipient of interaction. Therefore, a procedural revision was made at Session 55, for Ben only. In his sessions, scripts were mounted on schedule pages with Velcro®, and he wore a Velcro® bracelet. The teacher manually guided him to point to and say a script, and then to remove it from the schedule and attach it to his wrist band, so that he could refer to it after approaching the recipient. Subsequently, he returned the script to his schedule, turned the page, and began the next activity. This special procedure was discontinued after Session 66.

The teaching condition ended after each participant reliably said the scripts without

prompts and after two consecutive sessions during which the teacher stood near the wall opposite the boy's desk and delivered no prompts of any kind, either for following the activity schedule or for saying the scripts. For David and Jeremiah, elapsed time between the end of the teaching condition and the beginning of the new recipient condition was longer than intended; David contracted chicken pox and, soon thereafter, Jeremiah was hospitalized with a serious infection. Ben's sessions continued uninterrupted. Elapsed time between the teaching condition and the new recipient condition was 6 weeks for David and 3 weeks for Jeremiah.

New recipient. In this condition, which the boys began simultaneously, they encountered a different recipient of interaction (another familiar teacher). They continued to use the 16-page activity schedule, and textual cues continued to rotate across 10 activities. No prompts were delivered.

Script fading. The scripts "Look" and "Watch me" were simultaneously faded for all 3 boys. Scripts were faded in three steps, from end to beginning, by successively cutting away portions of the cards on which they appeared. In Step 1, one third (3 cm) of the 9-cm script card was removed; in Step 2, another third of the script disappeared; and in Step 3 the final third was removed, and scripts and cards were absent. Because scripts were faded by reducing the size of the cards on which the text was printed, portions of letters were sometimes displayed (e.g., only a part of an "o" in "Look" was visible).

Decisions about when to introduce fading steps were based upon the stability of the boys' interaction data and time constraints that resulted from the approach of the end of the school year. No prompts of any type were delivered during this condition.

New activities. This condition introduced new activities that were never associated with the scripts. In the first session, a tracing task

Table 1
Range and Mean Percentage Interobserver Agreement on Scripted Interaction, Elaborations, and Unscripted Interaction by Child and Condition

Type of interaction	Condition									
	Baseline		Teaching		New recipient		Script fading		New activities	
	Range	<i>M</i>	Range	<i>M</i>	Range	<i>M</i>	Range	<i>M</i>	Range	<i>M</i>
Scripted										
David			88–100	94		100		100		
Jeremiah			89–100	98		100		— ^a		
Ben			80–100	98		90		— ^a		
Elaborations										
David			75–100	95	87–88	88	90–100	95		
Jeremiah			83–100	95	92–100	96		— ^a		
Ben			75–100	95		95		— ^a		
Unscripted										
David		100		100	87–88	88	97–100	98	98–100	99
Jeremiah		100		100	88–100	94	93–100	96		98
Ben		100		100		100	92–93	92	98–100	99

^a No data are available for scripted responses and elaborations in the script-fading condition, because interobserver agreement was obtained after scripts were removed (i.e., because scripts were absent, there could be only unscripted responses).

replaced the puzzle activity that had previously been paired with “Look,” and a witch’s hat replaced the fireman’s hat that had previously been paired with “Watch me.” New pictures appeared in the photographic activity schedule, and the new materials were displayed on the bookshelves. Systematic rotation of activities continued, and in this session, the picture of the witch’s hat appeared once, and the picture of the tracing worksheet appeared twice (i.e., 3 of 16 scheduled activities were new).

In the following session, the tambourine was replaced by bells, and a different picture-matching task replaced the previous one; the picture of bells appeared twice, and 6 of 16 activities were new. In the last session, bristle blocks replaced Lego® blocks, and wearing sunglasses replaced doing the gymnastics tuck; the picture of bristle blocks appeared twice, and 9 of the 16 activities had not previously been associated with scripts. No prompts were delivered during this condition, and no textual cues were present.

Interobserver Agreement

Independent observers were stationed on opposite sides of the classroom doorway, and data sheets were covered when they were not recording. After sessions, their records of interaction were compared item by item, and each entry was scored as an agreement or a disagreement. Percentage interobserver agreement was calculated by dividing number of agreements by number of agreements plus disagreements, and multiplying the total by 100%. Interobserver agreement was obtained for at least one third of the sessions in each condition. Mean interobserver agreement on scripted interactions, elaborations, and unscripted interactions by condition and child is shown in Table 1.

RESULTS

During baseline, none of the boys interacted with the familiar teacher, although she was less than 4 m away, was not otherwise engaged, and was oriented toward them. After teaching began, David and Jeremiah

quickly began to say the scripts, to elaborate, and to make some unscripted statements; Ben's interaction remained lower and more variable until his special procedure (attaching textual cues to his wristband before he approached the teacher) was initiated at Session 55. Subsequently he, too, used scripted and unscripted interactions and elaborations (see Figure 1).

In the teaching condition, David's mean number of scripted interactions was eight, mean elaborations was seven, and mean unscripted interactions was one. Jeremiah's means were nine for scripted interactions, 16 for elaborations, and one for unscripted interactions. Ben's means were five, 12, and five for scripted interactions, elaborations, and unscripted interactions, respectively.

In the presence of a new recipient (Figure 2), the number of interactions increased for all 3 boys (note change in values shown on the ordinate). David's means were eight for scripted interactions, 32 for elaborations, and 12 for unscripted interactions. Jeremiah's means were 10, 20, and four, and Ben's were 10, 23, and 13 for scripted interactions, elaborations, and unscripted interactions, respectively.

The script-fading condition began with one third of each of the script cards absent. At Fading Step 2, another third of each of the textual cue cards was removed, and at Step 3, the scripts and cards were absent. Mean number of scripted interactions was 10 for each of the 3 youngsters; that is, they said the scripts at nearly every opportunity. Elaborations (verbal productions that occurred after a child had engaged in a scripted interaction) were no longer scored after scripts were removed. Mean elaborations prior to Step 3 were 16 for David, 25 for Jeremiah, and 20 for Ben. Mean numbers of unscripted interactions in this condition were 24, 15, and 36 for David, Jeremiah, and Ben, respectively. After textual cues were completely faded at Step 3, five to 16 of

David's interactions ($M = 11$) were "Look" and "Watch me," Jeremiah never again used the words prompted by the scripts, and one to 10 of Ben's interactions were "Look" or "Watch me" ($M = 7$).

When new activities were successively introduced, David's mean number of unscripted interactions was 48, Jeremiah's was 57, and Ben's was 41. Of these, an average of 13 (27%), four (7%), and nine (22%) for David, Jeremiah, and Ben, respectively, included the words "Look" and "Watch me." A review of the data sheets indicated that all 3 boys were more likely to comment on the new activities than on activities that were previously associated with scripts.

DISCUSSION

An underlying assumption of this study was that children (and especially children with severe developmental disabilities) are better able to learn from adults' language models when they are attending to the referents (Warren, Yoder, Gazdag, Kim, & Jones, 1993). Thus, the scripts "Look" and "Watch me" were designed as entrees to conversation about materials in the child's possession or activities in progress.

The boys' failure to talk during baseline with an attentive, familiar teacher is a strong statement about their deficits in social interaction skills. In the teaching condition, the presence of six scheduled activities that were never paired with the scripts presented an early probe opportunity. It is noteworthy that, even while the children were learning to say the scripts, some unscripted statements were recorded during these six activities (mean unscripted interactions during these activities were one for David, one for Jeremiah, and five for Ben).

A comparison of Figures 1 and 2 shows considerable elapsed time for David and Jeremiah after they completed the teaching condition and before the new recipient con-

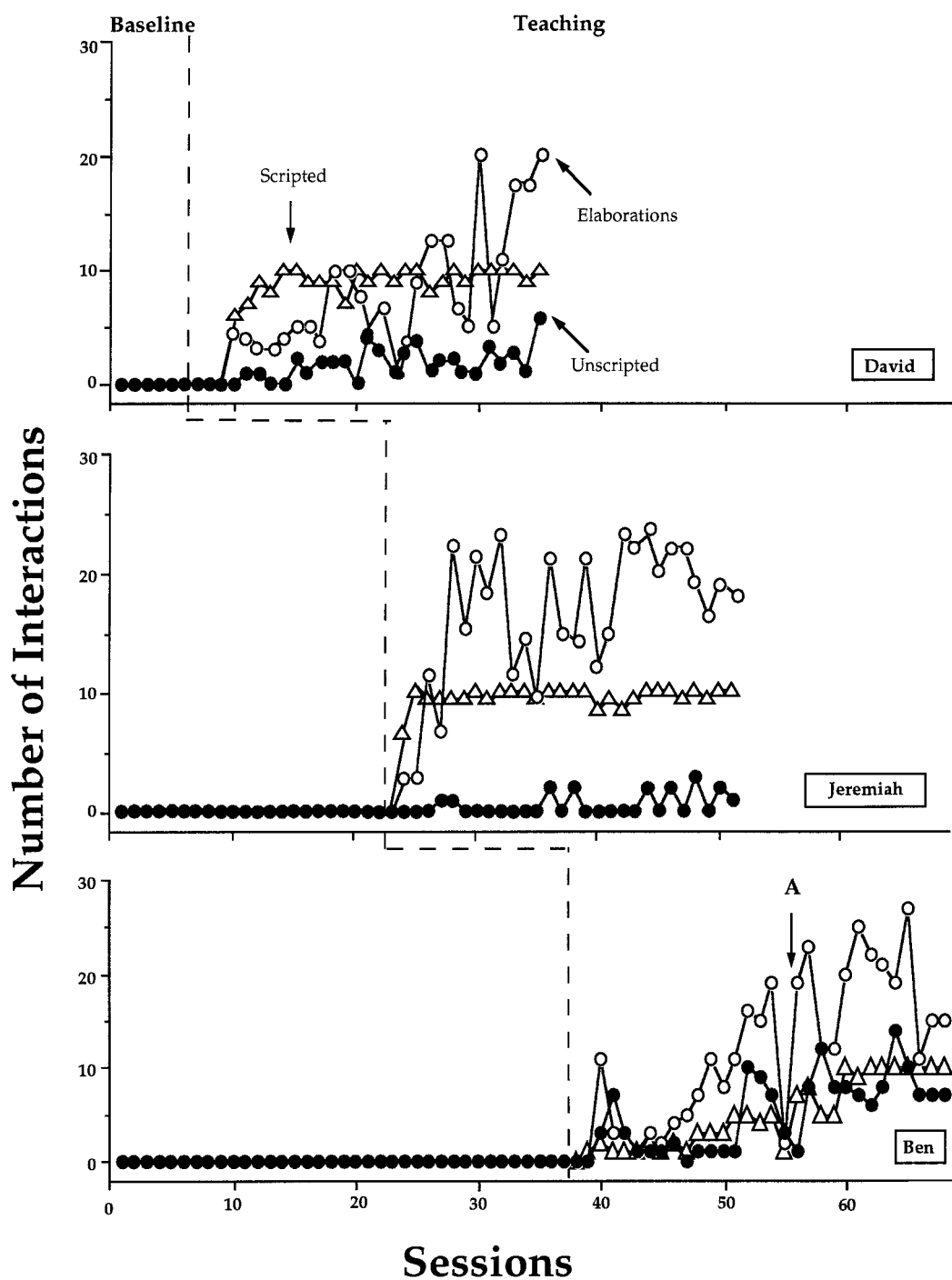


Figure 1. Number of unscripted interactions during baseline, and number of scripted interactions, elaborations, and unscripted interactions during teaching for David, Jeremiah, and Ben. Arrow A (Session 55) marks a procedural revision for Ben: Scripts were removed from the schedule and attached to his Velcro® bracelet. This procedure was discontinued after Session 66.

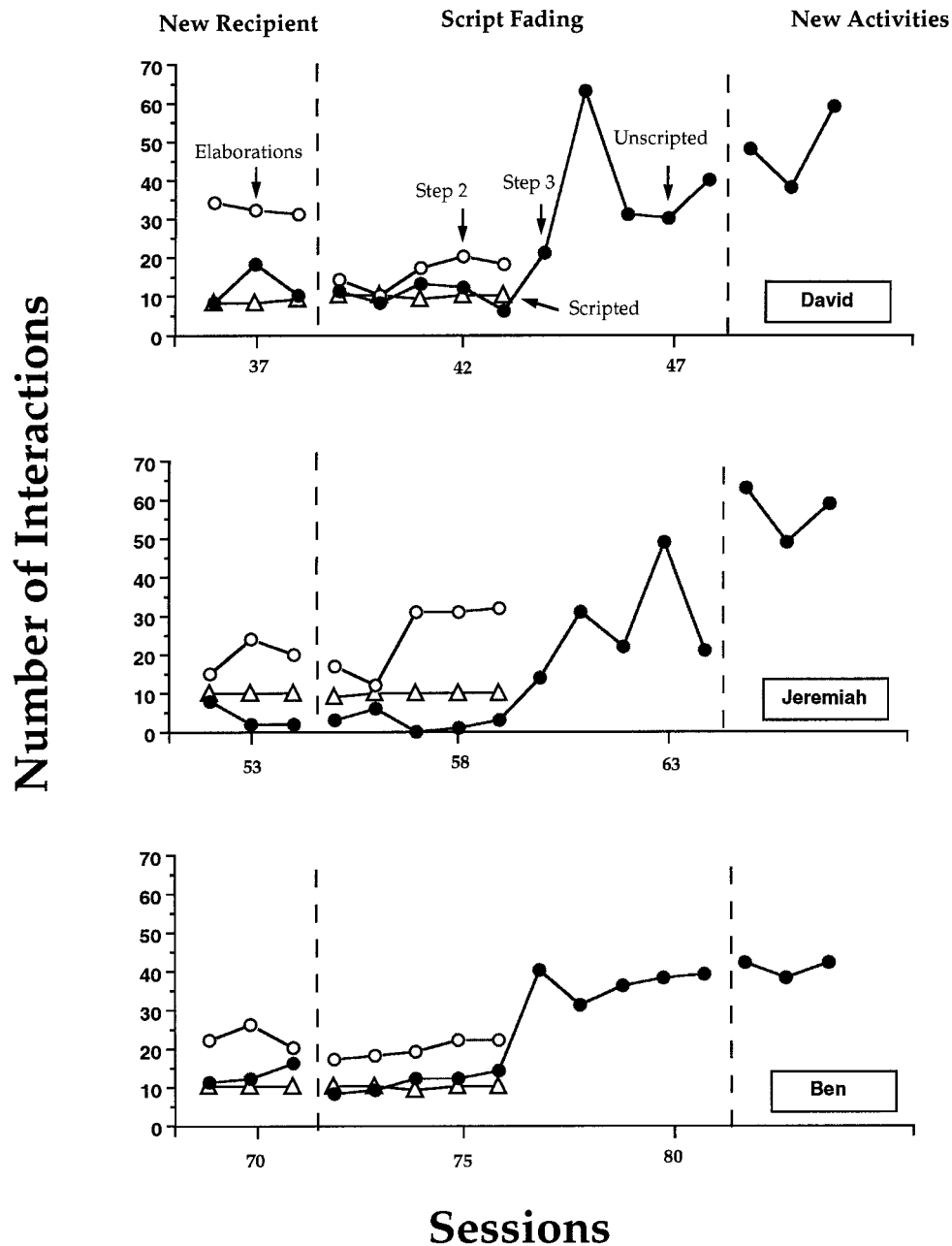


Figure 2. Number of scripted interactions, elaborations, and unscripted interactions for each boy during new recipient and script-fading conditions and number of unscripted interactions during the new activities condition. At the beginning of the script-fading condition, one third of the script card was removed. In Step 2, another third was removed, and at Step 3, scripts and cards were absent.

dition began for all 3 boys. David was the first to leave the teaching condition, and 46 days passed before he entered the new recipient condition, whereas Jeremiah experi-

enced a delay of 23 days. Levels of scripted interaction, elaborations, and unscripted interaction were maintained during this period.

After the final fading step, Jeremiah ceased to use the words occasioned by the scripts, and unscripted interactions increased substantially. However, when new activities were introduced, he resumed his use of "Look" and "Watch me"; these initiations represented 7% of his interactions in the new activities condition. Perhaps he had acquired a variety of conversational statements about the previously trained activities but lacked a more extensive repertoire for discussing the new activities.

The procedures used in this investigation are not unlike incidental teaching, in which the environment is arranged to engage children with activities and materials, and teaching occurs when a child initiates an interaction related to a topic of immediate interest (Hart & Risley, 1982; McGee, Krantz, & McClannahan, 1985). But these participants did not initiate until textual cues and prompting procedures were introduced. Initially, Ben (who required the most time to learn to say the scripts) made few unscripted statements; by the end of the study, his conversational initiations were often novel (e.g., "Look, a cookie," "I'm done," "It's circles," and "It's blue"). Observers reported that these statements had been modeled by the recipient in prior conversations.

A key feature of this intervention package is the behavior of the recipients of interaction, familiar teachers who were instructed not to ask questions or give directions but to comment on children's activities and accomplishments and to model phrases and short sentences that they surmised might be of interest to the boys. For example, David had been observed to scrutinize pictures of bridges; thus, when he presented a Lego® construction and said the script "Look," the recipient responded, "It's a bridge," and when he imitated, "Bridge," she replied, "Mom takes you on the Ben Franklin Bridge." In later interactions about Legos®, David said, "Ben Franklin Bridge," "walking

bridge," "a pretty bridge," and other responses modeled in previous conversations. Like the parents described by Hart and Risley (1995) who provided language models of good quality, the recipients talked for sociability, talked to stay involved with the children, added information, and, by their attentiveness, encouraged commenting. They did *not* ask questions or give instructions (e.g., "What's this?" or "Say—").

After the teacher's prompts were faded at the end of the teaching condition, none of the boys' conversational openers was imitative (the recipient did not model conversational entrees), although their rejoinders may have been; the measurement procedure did not differentiate novel versus imitative interaction. Like the normally developing toddlers described by Hart and Risley (1995), the participants often repeated adults' talk, but we noted that responses that were initially imitative later reappeared in spontaneous, generative speech. For example, during the teaching condition, Jeremiah often imitated the recipient ("Big Bird is yellow"), but after scripts were removed, he made unscripted statements such as "Yellow two" (holding a piece of the number puzzle), and "Look, yellow duck" (referring to a picture-matching task).

Imitation has long been recognized as important in the acquisition of verbal behavior (Risley, 1977), and in the case of children with autism, it is possible that it is sometimes too quickly defined as echolalia: "the meaningless repetition of previously heard words, phrases, and/or sentences" (McCormick & Schiefelbusch, 1984, p. 99). Anecdotally, it appeared that imitative responses decreased as unscripted responses increased, and this occurred in the absence of any special procedures for teaching the children to discriminate when it was appropriate to imitate or echo and when it was not (Lovaas, 1977). The frequency of imitative responses

during scripting and script-fading procedures warrants further research.

Adult rather than peer interaction partners were selected because familiar teachers were viewed as more likely to make comments that were commensurate with the children's language skills and that were of interest to them. Following the study, interaction with peers was neither observed nor reported; it would be interesting to examine the effects of this script-fading procedure on peer interchange.

Prior to this investigation, the 3 young participants had received a great deal of language instruction, most of which featured verbal prompts and models. They readily imitated words and phrases and dependably responded to the instruction "Say—" (e.g., "Say 'I'm done'" or "Say 'I made a tower'"), but they did not display unprompted speech, except to request favorite foods or toys. Thus, the prompting and prompt-fading procedures (graduated guidance, spatial fading, and shadowing delivered from *behind* the child) were selected in an endeavor to make the recipient of interaction—not the teacher or her prompts—a relevant discriminative stimulus. For the same reason, the teacher never modeled "Look" or "Watch me" when the boys were approaching or standing in front of the recipient of interaction. Although we hypothesize that, in the absence of scripts and script-fading procedures, verbal prompts or models would not have achieved the results reported here, this question awaits further investigation.

Johnson and Layng (1996) asserted that free-operant performance, not discrete-trial responding, is a key characteristic of behavioral fluency and noted that such performance is associated with constantly changing discriminative stimuli; "the changing terrain of social interactions" (p. 283) is offered as an example. In this study, the recipients of interaction made many novel comments in response to children's talk, and these ap-

peared to evoke the youngsters' next verbal productions. We suggest that scripts and script-fading procedures enabled the children to take some initial steps toward language fluency by occasioning practice opportunities in a context that resembled the shifting content of everyday conversation. And because "Look" and "Watch me" were the only verbal productions prompted, and no rewards were delivered during sessions, one may hypothesize that for these children with severe language delays, behavioral similarity (Baer, Peterson, & Sherman, 1969) and continued interaction with a congenial and undemanding recipient took on positive reinforcement functions (but this occurred only after scripts were introduced, resulting in some sampling of social exchanges). Thus, one strength of these procedures appears to be in bringing children into contact with adults' language models in a context that encourages a variety of verbal productions and does not feature instructions such as "Say—."

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STUDY QUESTIONS

1. What was the purpose of the photographic activity schedule? What prerequisite skills were trained prior to the script-fading assessment?
2. Describe the dependent variables measured in this study. How were the data collected?
3. What kind of prompting technique was used in baseline and how was it subsequently faded?
4. Briefly describe the roles of the teacher and recipient of interaction. In the discussion, the authors stated that the prompting procedures were designed "to make the recipient of interaction—not the teacher or her prompts—a relevant discriminative stimulus" (p. 201). In what way might the teacher have served as a discriminative stimulus in this study?
5. What modifications were incorporated into the new recipient, script-fading, and new activities conditions?
6. Summarize the results obtained for the 3 participants.
7. In the discussion, the authors stated that rewards were not delivered during sessions. What feature of the training procedure probably served as reinforcement for social interaction?
8. The authors suggested that the scripts and script-fading procedures used to increase social interaction skills provided initial steps toward fluent free-operant performance. To what extent did the target behaviors occur in a free-operant context?

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